

CLAIMS

What is claimed:

1. A semiconductor substrate processing apparatus, comprising:

a frame;

a substrate support mounted to the frame to support a semiconductor substrate;

a dispense head, having at least one outlet opening, connected to the frame for movement relative to the semiconductor substrate; and

a solvent bath attached to the frame having a reservoir and a drain, the reservoir holding a first fluid, the solvent bath shaped such that when the dispense head is in a selected position a second fluid dispensed from the at least one outlet opening enters the drain and the at least one outlet opening is exposed to the first fluid.
2. The semiconductor substrate processing apparatus of claim 1, wherein the dispense head is moveable between a first position and a second position relative to the semiconductor substrate.
3. The semiconductor substrate processing apparatus of claim 2, wherein when the dispense head is in the first position the second fluid dispensed from

the at least one outlet opening flows onto the semiconductor substrate and the second position is the selected position.

4. The semiconductor substrate processing apparatus of claim 3, wherein the dispense head further comprises at least one nozzle, the at least one outlet opening being at an end thereof.

5. The semiconductor substrate processing apparatus of claim 4, further comprising:

a casing having a chamber therein and an opening connected to the chamber and sized to fit the at least one nozzle of the dispense head;

a reservoir within the chamber to hold a fluid; and

a drain within the chamber positioned relative to the opening such that when the at least one nozzle of the dispense head is in the second position the dispense head is inserted into the opening, a liquid dispensed from the at least one nozzle enters the drain, and the at least one nozzle is exposed to the fluid held in the reservoir.

6. The semiconductor substrate processing apparatus of claim 5, wherein air in the chamber is saturated with evaporated fluid from the reservoir.

7. The semiconductor substrate processing apparatus of claim 6, wherein the nozzle does not contact the first fluid held in the reservoir.
8. The semiconductor substrate processing apparatus of claim 7, wherein when the dispense head is in the second position substantially no saturated air passes leaves the chamber through the opening in the casing.
9. The semiconductor substrate processing apparatus of claim 8, wherein the casing further comprises a base, a side wall, and a top piece.
10. The semiconductor substrate processing apparatus of claim 9, wherein the drain and the reservoir are attached to the base of the casing, the opening is in the top piece of the casing, and the side wall interconnects the base and the top piece.
11. The semiconductor substrate processing apparatus of claim 10, further comprising a funnel structure connected to the drain.
12. The semiconductor substrate processing apparatus of claim 11, wherein the funnel structure is circularly symmetric and concentric with the drain.

13. The semiconductor substrate processing apparatus of claim 12, wherein the reservoir surrounds the funnel structure.

14. The semiconductor substrate processing apparatus of claim 13, wherein the first fluid and the second fluid are liquids.

15. The semiconductor substrate processing apparatus of claim 14, wherein the first fluid and the second fluid have at least one component in common.

16. The semiconductor substrate processing apparatus of claim 15, wherein the first fluid and the second fluid are semiconductor processing liquids.

17. The semiconductor substrate processing apparatus of claim 16, wherein the first fluid is a solvent and the second fluid is photoresist.

18. A semiconductor substrate processing apparatus, comprising:
a frame;
a substrate support mounted to the frame to support a semiconductor substrate;
a dispense head, having at least one outlet opening, connected to the frame and being moveable between a first and a second position relative to the

substrate support, the at least one outlet opening being exposed to a first medium when the dispense head is in the first position; and

a solvent bath attached to the frame having a reservoir and a drain, the reservoir holding a first fluid, the solvent bath shaped such that when the dispense head is in a second position a second fluid dispensed from the at least one outlet opening enters the drain and the at least one outlet opening is exposed to a second medium.

19. The semiconductor substrate processing apparatus of claim 18, wherein when the dispense head is in the second fluid dispensed from the at least one outlet opening flows onto the semiconductor substrate.

20. The semiconductor substrate processing apparatus of claim 19, wherein the dispense head further comprises at least one nozzle, the at least one outlet opening being at an end thereof.

21. The semiconductor substrate processing apparatus of claim 20, wherein air in the chamber is saturated with the first fluid having evaporated from the reservoir.

22. The semiconductor substrate processing apparatus of claim 21, wherein the nozzle does not contact the first fluid held in the reservoir.

23. The semiconductor substrate processing apparatus of claim 22, wherein when the dispense head is in the second position substantially no saturated air leaves the chamber through the opening in the casing.
24. The semiconductor substrate processing apparatus of claim 23, wherein the solvent bath further comprises a base, a side wall, and a top piece.
25. The semiconductor substrate processing apparatus of claim 24, wherein the drain and the reservoir are attached to the base of the solvent bath, the opening is in the top piece of the solvent bath, and the side wall interconnects the base and the top piece.
26. The semiconductor substrate processing apparatus of claim 25, wherein the solvent bath further comprises a funnel structure connected to the drain, the funnel structure being circularly symmetric and concentric with the drain.
27. The semiconductor substrate processing apparatus of claim 26, wherein the reservoir surrounds the funnel structure.
28. An apparatus comprising:

a casing having a chamber therein and an opening connected to the chamber and sized to fit at least one nozzle of a dispense head;

a reservoir within the chamber to hold a fluid; and

a drain within the chamber positioned relative to the opening such that when the at least one nozzle of the dispense head is inserted into the opening a liquid dispensed from the at least one nozzle enters the drain and the at least one nozzle is exposed to the fluid held in the reservoir.

29. The apparatus of claim 28, wherein the casing further comprises a base, a side wall, and a top piece.

30. The apparatus of claim 29, wherein the drain and the reservoir are attached to the base of the casing, the opening is in the top piece of the casing, and the side wall interconnects the base and the top piece.

31. The apparatus of claim 30, wherein the base of the casing further comprises a funnel structure connected to the drain, the funnel structure being circularly symmetric and concentric with the drain.

32. The apparatus of claim 31, wherein the reservoir surrounds the funnel structure.

33. A method comprising:
- inserting a nozzle on a dispense head into a first position within a chamber, the chamber containing a controlled atmosphere; and
- positioning a drain relative to the first position such that when a fluid is dispensed from the nozzle the fluid enters the drain.
34. The method of claim 33, further comprising moving the dispense head into a second position over a semiconductor substrate and dispensing the fluid onto the semiconductor substrate.
35. The method of claim 34, wherein when the nozzle is in the first position substantially none of the controlled atmosphere leaves the chamber.
36. The method of claim 35, further comprising flowing a liquid into a portion of the chamber, the liquid at least partially evaporating within the chamber.
37. The method of claim 36, wherein the portion of the chamber surrounds the drain.
38. A method comprising:
- suspending a dispense head, having at least one outlet opening, in a first position relative to a semiconductor substrate;

dispensing a semiconductor processing fluid from the at least one outlet opening onto the semiconductor substrate while the dispense head is in the first position;

moving the dispense head into a second position relative to the semiconductor substrate;

dispensing the semiconductor processing fluid from the at least one outlet opening into a drain while the dispense head is in the second position; and

exposing the at least one outlet opening to a controlled atmosphere while the dispense head is in the second position.

39. The method of claim 38, wherein the at least one outlet opening is adjacent to a casing having a chamber therein when the dispense head is in the second position, the chamber containing the controlled atmosphere.

40. The method of claim 39, wherein the dispense head does not contact the casing when the dispense head is in the second position.

41. The method of claim 39, wherein the dispense head is suspended over the semiconductor substrate when the dispense head is in the first position.

42. The method of claim 41, further comprising flowing a liquid into a portion of the chamber, the liquid at least partially evaporating within the chamber.